United Nations A/54/135–E/1999/88

General Assembly
Economic and Social Council

Distr.: General
18 June 1999

Original: English

General Assembly
Fifty-fourth session
Item 101 of the preliminary list*
Environment and sustainable development

Economic and Social Council
Substantive session of 1999
Geneva, 5–30 July 1999
Item 13 (e) of the provisional agenda**
Economic and environmental questions: environment

International cooperation to reduce the impact of the El Niño phenomenon

Report of the Secretary-General

Summary

The present report is submitted in pursuance of General Assembly resolutions 52/200 and 53/185. It thus builds on the previous report of the Secretary-General on this topic (A/53/487). The Council is invited to consider the report in conjunction with the report of the Secretary-General entitled "Recommendations on how the United Nations will deal with the reduction of natural disasters after the conclusion of the International Decade for Natural Disaster Reduction" (A/54/136–E/1999/89). The present report covers context (sect. I); actions continued or initiated since the Guayaquil seminar (sect. II); and conclusions and recommendations (sect. III). Two annexes prepared by the World Meteorological Organization concern a scientific and technical retrospective (annex I) and a feasibility study for an international research centre (annex II). It is proposed to continue the existing inter-agency cooperation for concerted action on El Niño, to be coordinated within the successor arrangements for the Decade to be decided upon by the General Assembly at its fifty-fourth session, and to ensure the continuation of its full functional complementarity with the work of the Inter-Agency Committee on the Climate Agenda.

* A/54/50.
** E/1999/100 and Add.1.

99-18048 (E) 080799

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I. Context

1. In response to the occurrence of the El Niño phenomenon in 1997/98, in December 1997 the Inter-Agency Task Force on El Niño was created within the framework of the International Decade for Natural Disaster Reduction (IDNDR). In paragraph 6 of its resolution 52/200, the General Assembly welcomed its establishment for cooperative work on the prevention and mitigation of and preparedness for natural disasters related to the El Niño phenomenon. The Task Force has provided member agencies and their partner agencies outside the United Nations system with a platform for combining their efforts to improve understanding of the El Niño phenomenon, disseminating early warnings on the 1997/98 event and channelling technical assistance and capacity-building resources to Member States threatened or affected by El Niño-related disaster impacts. These actions have once again demonstrated the immense value of interdisciplinary approaches and complementarity in the global disaster reduction effort, as developed within the framework of IDNDR.

2. While the unprecedented strength of the 1997/98 El Niño event presented a great challenge to the disaster reduction community, it also provided new opportunities for international cooperation, spurred by an increasing scientific understanding of the climate system and new developments in climate observations technology and telecommunications. As recently stated in a report by one of the leading governmental institutions on climatic research in the Western hemisphere, the United States National Oceanic and Atmospheric Administration (NOAA), for the first time, affected countries around the world were aware of and could prepare for the climatic impacts associated with El Niño.[1] This clearly reflects well the growing notion of the culture of prevention that IDNDR was mandated to promote. Indeed, as part of their contribution to the Task Force on El Niño and within the framework of IDNDR, member agencies have intensified their ongoing programmes on the El Niño phenomenon or embarked on new ones.

3. In pursuance of General Assembly resolution 52/200 and with the generous support of the Government of Ecuador, the first intergovernmental seminar on the 1997/98 El Niño event was held at Guayaquil, Ecuador, from 9 to 13 November 1998. The seminar provided a substantive interface between the scientific and technological constituencies and their operational partners in disaster prevention, humanitarian disaster management and operational development, including support to local capacity-building. In assessing the efficacy of disaster prevention on the basis of early warning information in various stages of the El Niño event, the seminar reached consensus on the need for more complete atmospheric and oceanographic monitoring in order to improve the modelling of El Niño and the precision of the forecasts. There was also agreement on the need to "socialize" the information disseminated, i.e., to provide data tailored to the acute needs of the communities to be affected.

4. The Declaration of Guayaquil, adopted at the closing session of the seminar on the basis of its deliberations on the effectiveness of the international response to the 1997/98 El Niño event, contained a number of recommendations on the way forward. Following a proposal submitted by the Government of Ecuador, the Declaration called upon the United Nations to assess the feasibility of establishing an international centre for the research of the El Niño phenomenon at Guayaquil within the context of the Inter-Agency Task Force on El Niño, and to report on its findings to the General Assembly at its fifty-fourth session, through the substantive session of 1999 of the Economic and Social Council.

5. Experience with the 1997/98 El Niño event, presented at sessions on the socio-economic dimension and other programme components of the Guayaquil seminar, demonstrated once again the potentially devastating effects of El Niño-related climate extremes on the sustainable development efforts of developing countries, where most of the impacts occur. As indicated by an analysis performed by Munich Reinsurance, the economic losses incurred by the four most severely hit countries varied from 1.7 per cent of gross national product (GNP) in El Salvador to 11.4 per cent of GNP in Ecuador. International organizations, including the United Nations Development Programme (UNDP), assisted affected Governments in their work of reconstruction and rehabilitation. The Guayaquil Declaration recognized the urgency for actions to strengthen the capacity of existing governmental and intergovernmental programmes to help achieve the objectives of resolution A/RES/52/200. The following main fields were highlighted in particular: climate monitoring; improved prediction; early warning; sector-specific information flows; and capacity-building. The full report on the Guayaquil seminar is available through the United Nations Secretariat.

6. At the fifty-third session of the General Assembly, the Secretary-General submitted a report on progress made with international cooperation to reduce the impact of the El Niño phenomenon (A/53/487), as requested in General Assembly resolution 52/200. While expressing its concern about the widespread and devastating effects of the El Niño/Southern Oscillation (ENSO)in most regions of the world, the General

Assembly at its fifty-third session noted the progress made in the improved scientific understanding of the phenomenon and endorsed the recommendations made in the Secretary-General's report. Subsequently, the Assembly adopted resolution 53/185 on international cooperation to reduce the impact of the El Niño phenomenon, in which it called for, *inter alia*, the continued and full implementation of its resolution 52/200. It also decided, *inter alia*, to consider the La Niña phenomenon in the context of such implementation.[2] In part-fulfilment of Assembly resolution 53/185, operative paragraph 5, the summary report of the intergovernmental Guayaquil seminar, which includes the full text of the Declaration, was submitted to the Commission on Sustainable Development at its seventh session (New York, 19–30 April 1999) as background paper No. 10 (see also sect. II below).

II. Actions continued or initiated since the Guayaquil seminar

7. International activity towards the improved reduction of El Niño-related natural disasters has greatly intensified since the General Assembly, in its resolution 52/200, decided to intensify inter-agency collaboration and encourage more attention for this subject at the national and regional levels. In the short time since the intergovernmental Guayaquil seminar and the discussions on El Niño at the fifty-third General Assembly, several new initiatives have been launched and some that already existed within the framework of IDNDR have been intensified. Although these projects will eventually contribute to the full implementation of Assembly resolutions 52/200 and 53/185, their final assessment will only be possible after more time is given to secure the institutional arrangements and resources needed for the tasks to be undertaken.

8. For example, in an early follow-up of Assembly resolution 52/200, the World Meteorological Organization (WMO) agreed to take the lead in respect of the science and technology roles of the Inter-Agency Task Force on El Niño, in particular in relation to the understanding, observing and predicting of the El Niño phenomenon and its related meteorological and hydrological impacts. Accordingly, WMO presented a proposal for a scientific and technical retrospective of the 1997/98 ENSO event to the second meeting of the Inter-Agency Committee on the Climate Agenda (IACCA), held at Geneva on 16 and 17 April 1998, as an input to the Inter-Agency Task Force on El Niño. With the endorsement of IACCA, WMO embarked on the retrospective, mainly based on information solicited from its members on national impacts, the national capacity to meet needs and the views of other national institutions. A progress report on this component of the Inter-Agency Task Force's work has been presented to the Thirteenth WMO Congress, held at Geneva from 4 to 26 May 1999 (for a summary, see annex I below). The full report is expected to be before the General Assembly at its fifty-fourth session.

9. In accordance with its lead role on science and technology in the Inter-Agency Task Force on El Niño, WMO embarked on a feasibility study for an international centre for the research of the El Niño phenomenon at Guayaquil, as requested in the Declaration of Guayaquil. The study started off with a WMO mission to Ecuador from 27 January to 7 February 1999. Consultations were held with senior government officials representing various sector agencies at Quito and Guayaquil, and with relevant international organizations[3] and institutes.[4]

10. The outcome of the study was positive in the sense that the proposed centre not only has the full support of the Government of Ecuador and the national and regional institutions with which it would cooperate, but that such support may also be expected from the wider international climate science constituency. The centre would have two main functions: to promote and undertake research on the ENSO phenomenon and mathematical modelling to permit "downscaling" of global climate predictions to regional and national scales; and to provide outreach services to the community of users of ENSO data and predictions. A brief progress report on the feasibility study is contained in annex II below.

11. In parallel with its support for the feasibility study, WMO is acting as the executing agency for an Inter-American Development Bank-funded study on the prediction and amelioration of socio-economic impacts of ENSO in Latin America and the Caribbean. The specific objective of this 21-month project are: (a) to evaluate the existing institutional and technical forecasting capabilities in all countries of the region to anticipate and cope with El Niño's consequences; (b) to identify on a geographical basis, by groups of countries, the more vulnerable economic sectors and population groups; (c) to analyse the economic value of improved early warning systems as compared with the existing situation; and (d) to prepare proposals for improved early warning systems in selected countries or groups of countries within the subregions of Meso-America, the Caribbean and South America, to ameliorate the socio-economic impacts of El Niño. WMO has continued to produce and distribute regular updates on the demise of the El Niño phase and the onset of the La Niña phase, in

collaboration with the national meteorological services of its Member countries and climate research institutions.

12. Other agencies have taken initiatives in accordance with their mandates. Building on some of the main conclusions from the Guayaquil seminar, the United Nations Environment Programme (UNEP) has formulated a project proposal for the assessment of how early warning and other El Niño-related information was used at the country and community levels for the mitigation of El Niño impacts during the 1997/98 event. Supported by the United Nations Fund For International Partnerships, this inter-agency project will be undertaken by core teams in 12 countries,[5] with the participation of UNEP, WMO, the United Nations University, IDNDR, and the United States National Center for Atmospheric Research. The results are expected to be available in December 2000.

13. As a spin-off of the participation of the World Health Organization (WHO) in the Inter-Agency Task Force on El Niño and with inputs from several of its collaborating centres, WHO has prepared a bibliography on the public health hazards associated with the ENSO phenomenon. It will soon be made available on the WHO Web site as a contribution to the work of the Task Force.

14. The specific El Niño concerns with regard to natural disaster reduction have been the subject of discussion at various IDNDR conferences, including an international IDNDR early warning conference, held at Potsdam, Germany from 7 to 11 September 1998, an IDNDR-Economic and Social Commission for Asia and the Pacific regional conference for Asia, held at Bangkok from 13 to 17 February 1999, and an IDNDR-UNEP regional conference for Africa held at Nairobi from 18 to 21 May 1999. As announced in the Guayaquil Declaration, a further international conference on the 1997/98 ENSO event, hosted by the Government of Peru, will be held at Lima from 20 to 24 September 1999. The conference will focus on institutional arrangements, the role of decision makers and the application of scientific knowledge and technological expertise in El Niño-related prevention. Another conference, tentatively planned to be held at La Serena, Chile, from 12 to 15 October 1999, will investigate linkages between the El Niño phenomenon and the process of desertification, with support from the Government of Chile and with the participation of the Economic Commission for Latin America and the Caribbean and the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa.

15. As a further follow-up to the Guayaquil seminar, in the segment on oceans and seas of the report on its seventh session, the Commission on Sustainable Development welcomed the intergovernmental expert meeting held at Guayaquil, and the two expert meetings to be held at Lima in September 1999 and at La Serena, Chile, in October 1999. The Commission also, *inter alia*:

(a) Requested the Secretary-General to gather information on all aspects of the impact of ENSO, through national reports on the implementation of Agenda 21, and to provide this information to the Inter-Agency Task Force in order to contribute to the development of the internationally concerted and comprehensive strategy towards the assessment, prevention, mitigation and rehabilitation of the damage caused by ENSO;

(b) Decided to consider the impacts of ENSO as part of its examination of the integrated planning and management of land resources at its eighth session;

(c) Invited all intergovernmental agencies concerned with aspects of the oceans to consider, within their respective mandates, whether their programmes of work make sufficient allowance for considerations of the potential impact of increased climate variability, and to review through the various coordination arrangements what more needs to be done to ensure adequate understanding of the prediction of coastal and marine impacts of such phenomena as El Niño.

III. Conclusions and recommendations

16. The experience with the 1997/98 El Niño event has reaffirmed the great predictive value of El Niño signals obtained from the equatorial Pacific. At the same time, however, additional influences exerted by oceanic and atmospheric processes taking place in the Indian and Atlantic Oceans have clearly made predictions much less reliable for certain areas outside the Pacific Ocean basin. It is clear that the precision of future ENSO predictions for such areas will critically depend on the integration of climate oscillations occurring in the Indian and Atlantic Oceans with those from the Pacific Ocean, based on a sound scientific understanding of the interactions between all three. In view of the very serious potential for damage, both in terms of human suffering and economic losses, efforts should be made to intensify and/or extend observations of climate oscillation systems in the three large ocean basins, and to further develop existing ENSO prediction skills, based on improved modelling.

17. Another pertinent conclusion from the effort to reduce the 1997/98 El Niño event concerns the availability of data and their usefulness for decision makers in the field. As compared with ENSO events in the past, there has probably never been as much information available at low cost, mainly as a result of the ever-increasing use of the Internet and the World Wide Web. Despite the existence of this rich source of information, it has not always been easily interpreted by user communities due to lack of processing and adaptation to their specific needs. The potential role of regional ENSO centres (such as the proposed Guayaquil centre) on this issue could be to facilitate the distribution of relevant information to users in countries within relatively homogeneous climatic regions, and to promote the best possible utilization of such information for the reduction of disaster impacts.

18. The early recognition of the unusual strength of the 1997/98 El Niño and the timely action undertaken on the General Assembly initiative, as expressed in its resolution 52/200, has provided an unprecedented opportunity to maximize the potential available within the IDNDR framework for early disaster prevention through advocacy and the wide distribution of information, including early warning, and to assess the effectiveness of these approaches as well as the weaknesses which still require further development. This has underscored the value of close inter-agency collaboration among disaster reduction constituencies at the regional and national levels, both within as well as outside the United Nations system. Efforts must therefore be made to ensure that the possibilities for well coordinated action will also exist after the conclusion of IDNDR at the end of 1999. These issues are to be discussed under agenda item 13 (h) (for details, see A/54/136–E/1999/89).

19. The Inter-Agency Task Force on El Niño has clearly shown the immense value of concerted action among United Nations system partners and their non-United Nations counterparts within the framework of IDNDR in advocacy, coordination of action and the wide dissemination of information. The Secretary-General invites the Council and the General Assembly not only to safeguard appropriate successor arrangements for disaster prevention but also to ensure continuation of the work of the Inter-Agency Task Force on El Niño (in keeping with Assembly resolution 53/185 and the report of the Commission on Sustainable Development on its seventh session, the Task Force should probably be renamed the Inter-Agency Task Force on ENSO) as a part of such arrangements.

20. From the start of IDNDR, the member agencies of what now constitutes IACCA (established in 1997) have formed a solid technical and scientific platform for action towards the goals and objectives of IDNDR in the prevention of climate-related natural disasters. In view of the important and probably growing global hazards posed by climate variability and extremes, including ENSO events, it is crucial that within the framework of the successor arrangements for IDNDR proposed by the Secretary-General (see A/54/136–E/1999/89), the strong institutional connections between IACCA and the United Nations system-wide disaster prevention constituency are retained.

Notes

[1] See "An experiment in the application of climate forecasts: NOAA-OGP activities related to the 1997/98 El Niño event" (NOAA, Office of Global Programs, 1999).

[2] In the present report, the joint consideration of both El Niño and La Niña will be reflected by the use of the term El Niño/Southern Oscillation, or ENSO.

[3] UNDP; the United Nations Educational, Scientific and Cultural Organization/Intergovernmental Oceanographic Commission; and the International Council of Scientific Unions.

[4] The International Research Institute for Climate Prediction of New York; and the Permanent Commission for the South Pacific and its subsidiary at Quito.

[5] Cuba, Costa Rica, Panama, Ecuador, Ethiopia, Kenya, Mozambique, China, Viet Nam, the Philippines, Papua New Guinea and Fiji.

Annex I

The 1997/98 El Niño: a scientific and technical retrospective*

1. The very strong 1997/98 El Niño event brought to international attention the global scale of risks posed by extremes of climate, particularly for the developing world. Loss of life, destruction of infrastructure, depletion of food and water reserves, displacement of communities and outbreaks of disease all occurred as manifestations of climate-related natural disasters. The international community recognized the intensity and global distribution of natural disasters associated with the El Niño event, which led to the conviction, as reflected in General Assembly resolutions 52/200 and 53/185, that steps should be taken to mitigate the negative impacts of climate extremes.

2. WMO took a lead role in coordinating scientific and technical information about the 1997/98 El Niño event. In particular, during the course of the event WMO prepared a series of publications, called *El Niño Updates*, providing information on the current status; these were issued to national meteorological and hydrological services and made available to the media and international agencies.

3. WMO, with UNEP, UNESCO/IOC and ICSU subsequently organized the scientific programme for the first global assessment of the 1997/98 El Niño event, carried out at Guayaquil, Ecuador, from 9 to 13 November 1998. The first global assessment (international seminar on the 1997/98 El Niño event: evaluation and projections) was co-sponsored by the Government of Ecuador, the Inter-Agency Task Force on El Niño and the Permanent Commission for the South Pacific.

4. WMO is nearing completion of a scientific review, to be published as *The 1997/98 El Niño Event: A Scientific and Technical Retrospective* with the support of UNEP and UNESCO/IOC as a contribution to the Inter-Agency Task Force on El Niño to establish a sound scientific and technical basis for new strategies to mitigate the negative impacts of climate extremes.

5. The material for the *Retrospective* is drawn from the presentations made at the first global assessment meeting at Guayaquil, national studies and scientific research. The *Retrospective* has three parts:

(a) Part I. Variability of the climate system: reviews relevant knowledge and processes of the climate system, including the Asian monsoon and El Niño, and describes the El Niño Southern Oscillation as an outcome of the coupled ocean-atmosphere system;

(b) Part II. The 1997/98 El Niño event: reviews the development and evolution of the 1997/98 El Niño event and the global pattern of climate extremes, examines many of the regional climate anomalies and provides information on the extent of human impacts and losses;

(c) Part III. The way ahead: examines how science and technology, supporting climate information and prediction services, can be used in the service of community preparedness, early warning and management of climate risk in society, particularly through the integration of science and technology with natural disaster reduction and sustainable development planning and policies.

* Prepared by WMO.

Annex II

International centre for the research of El Niño at Guayaquil, Ecuador: a feasibility study*

1. In response to General Assembly resolution 52/200 on international cooperation to reduce the effects of the El Niño phenomenon, the first global assessment of the 1997/98 El Niño event was carried out at Guayaquil, Ecuador, from 9 to 13 November 1998. The first global assessment (international seminar on the 1997/98 El Niño event: evaluation and projections) was co-sponsored by the Government of Ecuador, the United Nations Task Force on El Niño and the Permanent Commission for the South Pacific.

2. An outcome of the international seminar was the Declaration of Guayaquil, submitted to the General Assembly by the Government of Ecuador on 17 November 1998. The Declaration of Guayaquil called for, *inter alia*, immediate action to assess the feasibility of establishing an international centre for the research of the El Niño phenomenon at Guayaquil, as proposed by the Government of Ecuador, and suggested that such action be undertaken within the context of the Inter-Agency Task Force on El Niño.

3. WMO, through its Secretary-General, recognized the urgent need to undertake the feasibility study and organized a mission for the purpose from 28 January to 7 February 1999. The mission included consultations with the International Research Institute for Climate Prediction of New York, with institutes and senior officials at Quito and Guayaquil, and with other relevant international institutions.

4. The report of the feasibility study describes the scientific and organizational contexts, the scope and functions that such a centre should undertake, a suitable location, staff and equipment needs, and a proposed organizational arrangement. The report also outlines the probable contributions that would be required from the host countries, and the magnitude and nature of external resources required. These are estimated as US$ 1.1 million per annum and US$ 300,000 per annum, respectively, and a total of US$ 2.62 million for equipment capital costs (computing and observational infrastructure, not accommodation).

5. The report of the feasibility study has been made available to the Government of Ecuador and is currently under consideration.

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* Prepared by WMO